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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/669,585 | 09/23/2003 | William Knauer | 34896 | 6803 |
| 116 | 7590 | 05/06/2004 | EXAMINER | |
| PEARNE & GORDON LLP 1801 EAST 9TH STREET SUITE 1200 CLEVELAND, OH 44114-3108 | | | NGUYEN, JIMMY | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2829 | |

DATE MAILED: 05/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|-------------------------------|---------------------------------|--|
| Office Action Summary | Application No. 10/669,585 | Applicant(s) KNAUER, WILLIAM | |
| | Examiner Jimmy Nguyen | Art Unit 2829 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>0404</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The specification is objected to because on page 4 line 9 test head 14 is not found. Correction is required. See MPEP § 608.01(b).

Claim Objections

2. Claim 7 is objected to because of the following informalities: the word "mail" is inappropriate. Appropriate correction is required.

Information Disclosure Statement

3. The IDS is objected to because the three references "2001/0050571 A1 of Johnston" and "2002/0063566 A1 of Bruno et al" and "2002/0093355A1 of Parker et al" are listing in the wrong section. Correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1 – 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Botka et al (US 5558541) in view of Phillips (US 4665360).

As to claim 1, Botka et al disclose (figs 1 and 2) a rf test interconnection system (10) for connecting a measurement device (16) to a device under test (wafer or IC chips on the wafer, column 2 line 13 - 14), said system comprising:

a probe card (20 or 114) fixture board is interface with wafer under test, column 2 line 10 –15) having a probe extending from a first side (not shown, but the fixture board 20 must has the probes on one side to contact with the wafer under test) of said probe card (20, fixture board) for making electrical contact with said device under test (IC chips under test, column 2 line 13 – 14) and a probe card coaxial connector (116, figure 2, column 2 line 24 – 25) extending from a second side (bottom side of fixture board 20) of said probe card (20, fixture board 20) , said probe (not shown, but the fixture board 20 must has the probes on one side to contact with the wafer under test) and said probe card coaxial connector (116, figure 2, column 2 line 24 – 25) being in electrical communication;

a test head (100, fig 2) having a test head coaxial connector (126) adapted to mate with said probe card coaxial connector (116) when said probe card (20 of figure 1 or 114 of figure 2) and said test head (100) are urged together, said test head coaxial connector (126) being connectable to said measurement device (16, fig 1).

Botaka et al disclose all of the limitations except for one limitation:

1- a de-mating device attached to one of said probe card for urging said probe card and said test head apart.

On the other hand, Phillips discloses (figs 1 – 3) a de-mating device (56, 64, 80 and 82) attached to one of said probe card (26 has the prober platform 32 which is attached to de- mating device) and said test head (12) for urging said probe card (26) and said test head (12) apart by applying a separating force (column 3 lines 52 – 54)

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therebetween, said probe card (26) and said test card coaxial connectors (not shown, column 3 line 28) being electrically connected when said test head (12) and said probe card (26 has the prober platform 32 which is attached to de- mating device) are urged together by a connection force and electrically disconnected when said connection force is removed (column 3 line 41 – 55).

It would have been obvious to one having an ordinary skill in the art at the time of the invention was made to use the de-mating device of Phillips within the testing system of Botka et al for the benefit of replacing a new probe card to match with devices under test.

As to claim 2, Phillips discloses (figs 1 – 3) a system according to claim 1, wherein said de-mating device (56) is a spring-loaded plunger (column 2 line 65).

As to claims 3, 9, Phillips discloses (figs 1 – 3) a system according to claim 1, wherein said de-mating device or plunger (56, 64, 80 and 82) is attached to test head (12).

As to claims 5, 10, Botaka et al disclose (figs 1, 2 and 4) a system according to claim 1, wherein said coaxial connectors (126) include a compression member (146) that maintains compressive contact between the connectors (126, 116) when said probe card (114, fixture board) and said test head (100) are urged together.

As to claims 6, 11, Botaka et al disclose (fig 5) a system according to claim 1, further comprising tapering male (116) extensions (118') cooperating with female receptors (132 and yellow highline in figure 5) to assist in aligning said connectors (116, 126).

As to claims 7, 12, Botaka et al disclose (fig 5) a system according to claim 1, further comprising tapering female (126) extensions (132 and yellow highline in figure 5') cooperating with male (116) receptors (118') to assist in aligning said connectors (116, 126).

As to claims 4 and 8, Botaka et al disclose (figs 1 and 2) a rf test interconnection system (10) for connecting a measurement device (16) to a device under test (wafer or IC chips on the wafer, column 2 line 13 - 14), said system comprising:

a probe card (20 or 114) fixture board is interface with wafer under test, column 2 line 10 –15) having a probe extending from a first side (not shown, but the fixture board 20 must has the probes on one side to contact with the wafer under test) of said probe card (20, fixture board) for making electrical contact with said device under test (IC chips under test, column 2 line 13 – 14) and a probe card coaxial connector (116, figure 2, column 2 line 24 – 25) extending from a second side (bottom side of fixture board 20) of said probe card (20, fixture board 20) , said probe (not shown, but the fixture board

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20 must has the probes on one side to contact with the wafer under test) and said probe card coaxial connector (116, figure 2, column 2 line 24 – 25) being in electrical communication;

a test head (100, fig 2) having a test head coaxial connector (126) adapted to mate with said probe card coaxial connector (116) when said probe card (20 of figure 1 or 114 of figure 2) and said test head (100) are urged together, said test head coaxial connector (126) being connectable to said measurement device (16, fig 1).

Botaka et al disclose all of the limitations except for three limitations:

- 1- the probe card coaxial connector including a female inner receptacle and outer barrel.
- 2- the test head coaxial connector includes a male center pin and a male outer barrel; and
- 3 - a spring loaded plunger attached to one of said probe card for urging said probe card and said test head apart and

On the other hand, Phillips discloses (figs 1 – 3) a spring loaded plunger (56, column 2 line 65) attached to one of said probe card (26 has the prober platform 32 which is attached to de- mating device) and said test head (12) for urging said probe card (26) and said test head (12) apart by applying a separating force (column 3 lines 52 – 54) therebetween, said probe card (26) and said test card coaxial connectors (not shown, column 3 line 28) being electrically connected when said test head (12) and said probe

card (26 has the prober platform 32 which is attached to de-mating device) are urged together by a connection force and electrically disconnected when said connection force is removed (column 3 line 41 – 55).

It would have been obvious to one having an ordinary skill in the art at the time of the invention was made to use the spring loaded device of Phillips within the testing system of Botka et al for the benefit of replacing a new probe card to match with devices under test.

With respect to the female connector, Botaka et al. disclose the probe card with a coaxial connector (116), except that this connector is a male connector. Botaka et al. Disclose that the female connector (126) with the female inner receptacle and female outer shell is mounted on the test head, instead of the probe card. That is, the connectors of Botaka et al. are in a reversed order with respect to those of the claim.

Nevertheless, it is a well known to use either a male connector on the test head or a female connector depending on the designer's preference. Both types of connectors are well known and they mate into each other, so it does not affect the device in any way if the male connector is on the probe card and mates into the female connector on the test head or the other way around. Whether to put the male piece on the probe card or the female piece is merely a design choice that does not affect the operation or function of the device in any way. Also, both configurations are routinely

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used. Furthermore, it has been held that mere reversal of parts or movement is an obvious expediant. *In re Gazda*, 104 USPQ 400.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to make the connector on the probe card of Botaka et al. a female connector, instead of a male connector. One of ordinary skill would be motivated to do so for the purpose of convenience and to make an obvious design choice.

Further, one would also have been obvious to make the connector of the test head of Botaka et al. a male connector, instead of a female connector. One of ordinary skill would be motivated to do so for the purpose of convenience and to make an obvious design choice.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy Nguyen at (571) 272- 1965. Any inquiry of a general nature of relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-4900.



JN.

April 30, 2004